UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

MOBILEPAY LLC, Plaintiff v. **BANK OF AMERICA MERCHANT SERVICES, LLC,** Defendant	**Case No. 6:18-cv-00321** **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff MobilePay LLC ("Plaintiff" or "MobilePay") hereby asserts the following claims for patent infringement against Defendant Bank of America Merchant Services, LLC ("Defendant" or "BOA"), and alleges, on information and belief, as follows:

THE PARTIES

1.   MobilePay is a limited liability company organized and existing under the laws of the Texas with its principal place of business at 17330 Preston Road, Ste 200, Dallas, Texas 75252.

2.   Defendant is a limited liability company organized under the laws of Delaware, with a principal place of business in Atlanta, Georgia.

JURISDICTION AND VENUE

3.   This action arises under the patent laws of the United States, 35 U.S.C. § 1, *et seq*. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

4.   Defendant has committed acts of infringement in this judicial district.

5.   Defendant has a regular and established place of business in this judicial district.

6.　　On information and belief, the Court has personal jurisdiction over Defendant because Defendant has committed, and continues to commit, acts of infringement in the state of Texas, has conducted business in the state of Texas, and/or has engaged in continuous and systematic activities in the state of Texas.

7.　　On information and belief, Defendant's instrumentalities that are alleged herein to infringe were and continue to be used, imported, offered for sale, and/or sold in the Western District of Texas.

8.　　Venue is proper in the Western District of Texas pursuant to 28 U.S.C. § 11400(b).

BOA

9.　　Upon information and belief, Defendant BOA makes, uses, imports, sells, and/or offers for sale the BOA Mobile Pay Card Reader. The BOA Mobile Pay Card Reader is described by and is exemplified by the following references:

- "Mobile Pay – Bank of America Merchant Services" ("**Mobile Pay**"), *available at* https://www.youtube.com/watch?v=01aEn5vnIUA (last accessed September 18, 2018);

- "EFM32 Tiny Gecko Series 1 Family EFM32TG11 Family Data Sheet ("**EFM32**"), Preliminary Rev. 0.5, *available at* https://www.silabs.com/documents/public/data-sheets/efm32tg11-datasheet.pdf (last accessed September 18, 2018);

- "audio - How does the phone detect if 3.5 mm jack circuit is closed? - Electrical Engineering Stack Exchange" ("**3.5 mm jack circuit**"), *available at* https://electronics.stackexchange.com/questions/95575/how-does-the-phone-detect-if-3-5-mm-jack-circuit-is-closed (last accessed September 18, 2018);

- "3.5 mm Headset: Accessory Specification | Android Open Source Project" ("**3.5 mm headset**"), *available at* https://source.android.com/devices/accessories/headset/plug-headset-spec (last accessed September 18, 2018);

- "**Mobile Pay Business**" ("**Mobile Pay Business**"), *available at* http://finance.fiu.edu/controller/Docs/Mobile_Pay_Business.pdf (last accessed September 18, 2018);

- Mobile Point of Scam: Attacking the Square Reader" ("**Blackhat**"), *available at* https://www.blackhat.com/docs/us-15/materials/us-15-Mellen-Mobile-Point-Of-Scam-Attacking-The-Square-Reader-wp.pdf (last accessed September 18, 2018); and

- "What Is SSL (Secure Sockets Layer)? | DigiCert.com" ("**SSL**"), *available at* https://www.digicert.com/ssl/ (last accessed September 18, 2018).

COUNT I
(Infringement of U.S. Patent No. 9,800,706)

10.   Plaintiff incorporates paragraphs 1-9 herein by reference.

11.   Plaintiff is the owner, by assignment, of U.S. Patent No. 9,800,706 (the "'706 Patent"), entitled ELECTRONIC DEVICE INPUT/OUTPUT SYSTEM AND METHOD, which issued on October 24, 2017. A copy of the '706 Patent is attached as **Exhibit A**.

12.   The '706 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

13.   Upon information and belief, Defendant has infringed and continues to infringe one or more claims, including Claim 1, of the '706 Patent by making, using, importing, selling, and/or, offering for sale the BOA Mobile Pay Card Reader. Defendant has infringed and continues to infringe the '706 Patent either directly or through the acts of contributory infringement or inducement in violation of 35 U.S.C. § 271. Defendant has been on notice of the '706 Patent at least as early as the date it received service of this complaint.

14.   Defendant sells, offers to sell, and/or uses the BOA Mobile Pay Card Reader, and any similar products, which infringe at least Claim 1 of the '706 Patent. The BOA Mobile Pay Card Reader is designed to connect to and work with a mobile device. (collectively "**the MCR System**").

15.   Claim 1 of the '706 Patent recites:

1.   A system for coupling a credit card reader to a mobile device, the system

comprising:

a hardware component that connects to the mobile device and the credit card reader, the hardware component including:

a first mechanism configured to receive data provided by the credit card reader;

a communication controller for buffering the data received from the credit card reader prior to conversion by a first circuit;

the first circuit configured to convert the data to an analog audio signal;

a connector to couple the hardware component to an audio input port of the mobile device, wherein:

the connector bridges a microphone pin of the audio input port such that the mobile device detects a presence of the connector in the audio input port; and

the connector provides an audio communication between the hardware component and the mobile device and communicates the analog audio signal from the hardware component to the mobile device;

a second mechanism on the mobile device configured to receive the analog audio signal and convert the analog audio signal into binary data; and

a third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding.
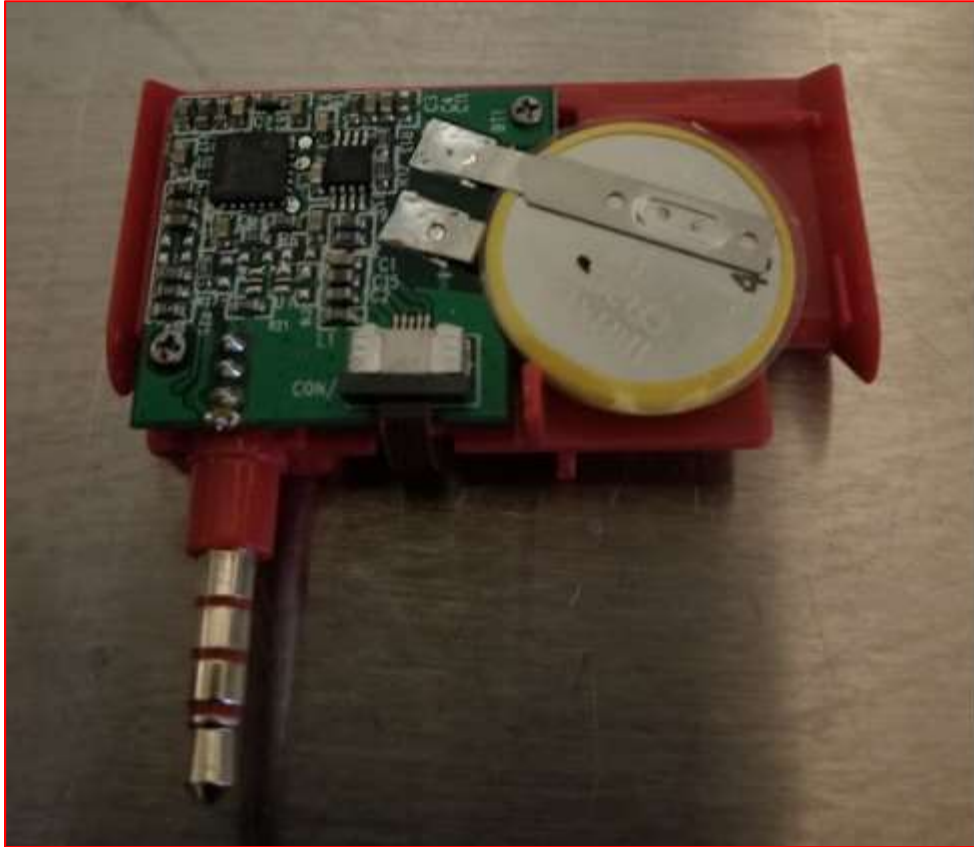
16.   The MCR System is a system for coupling a credit card reader to a mobile device. *See*, e.g., **Mobile Pay**. An example is illustrated below:
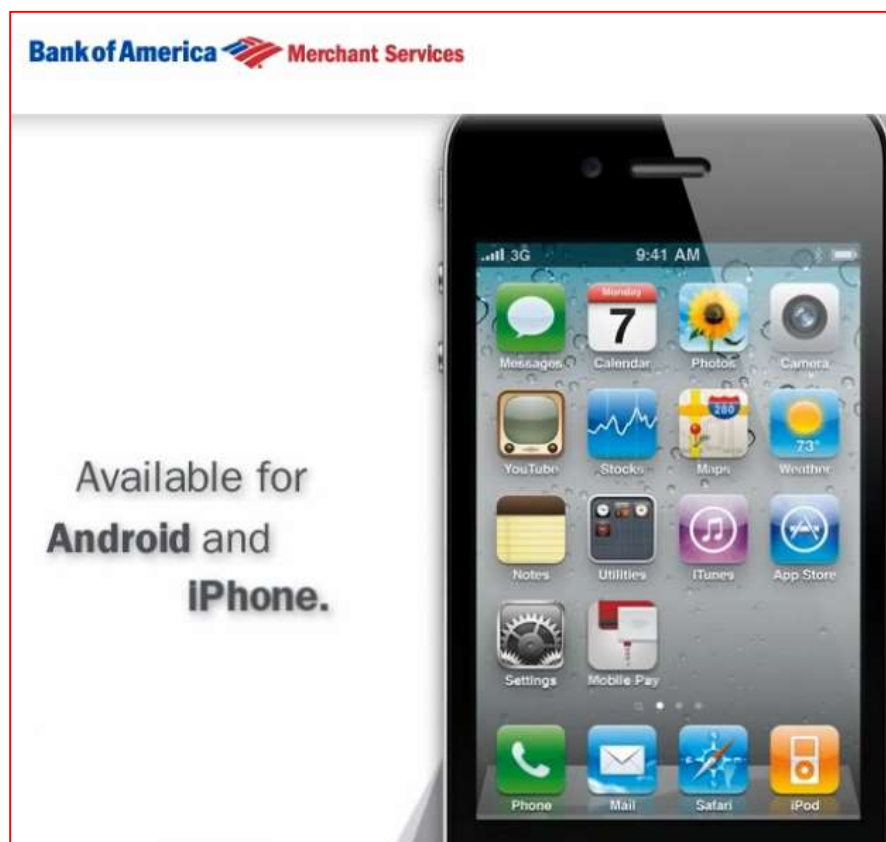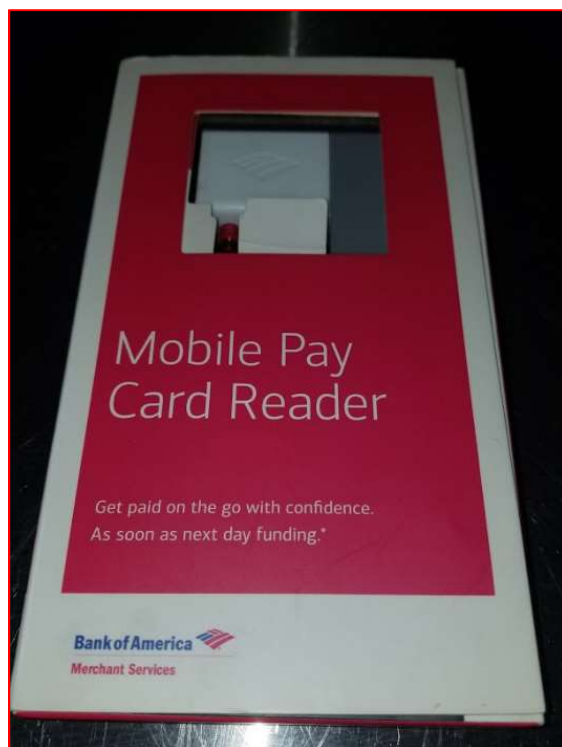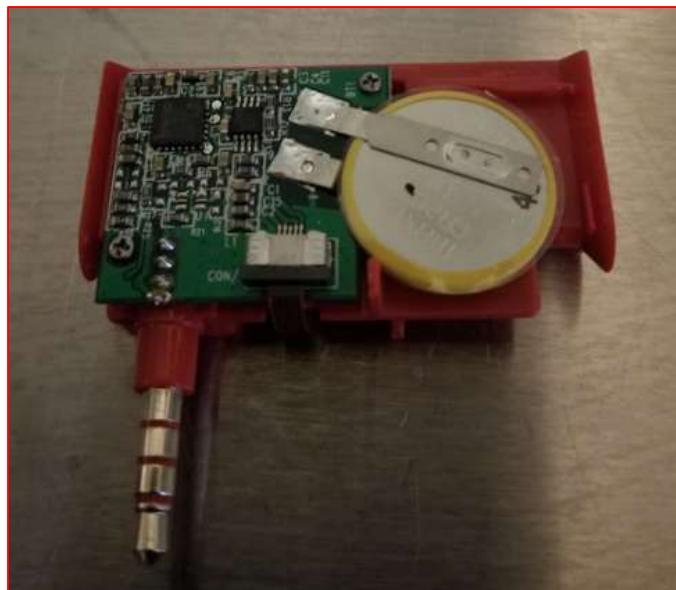
Mobile Pay.

17.   The MCR System is a hardware component that connects to a mobile device and a credit card reader. An example is illustrated below:
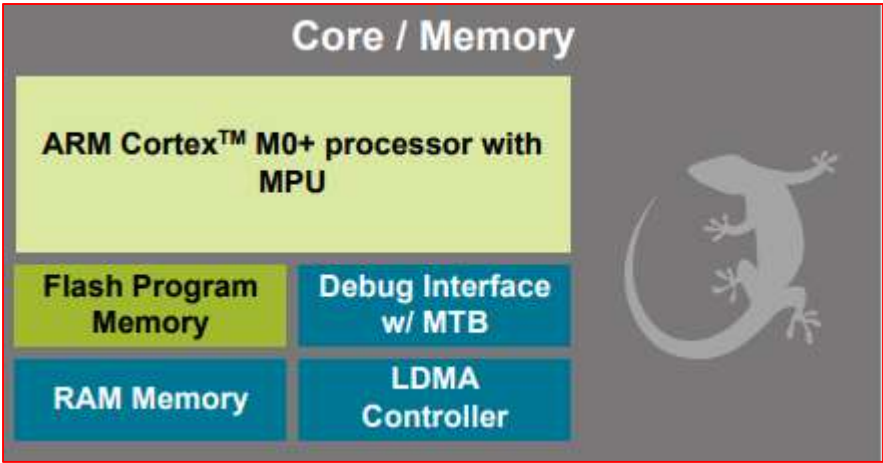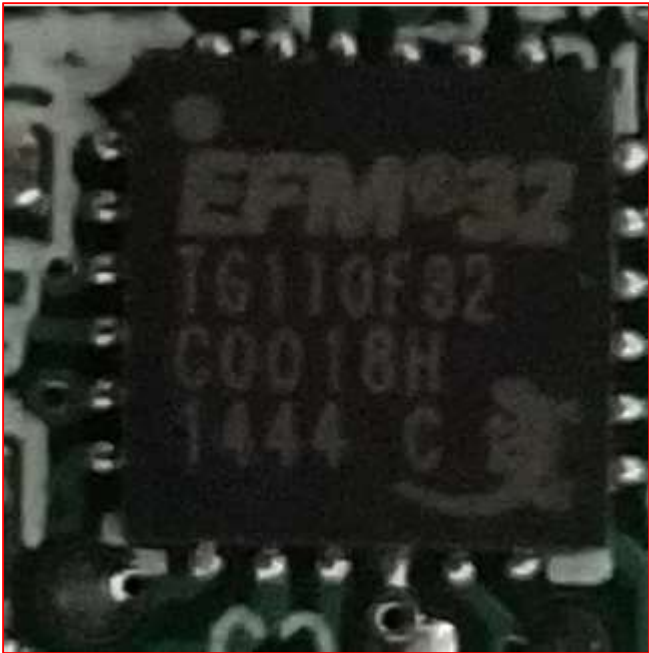
18.   The MCR System includes a first mechanism configured to receive data provided by the credit card reader. An example is illustrated below:
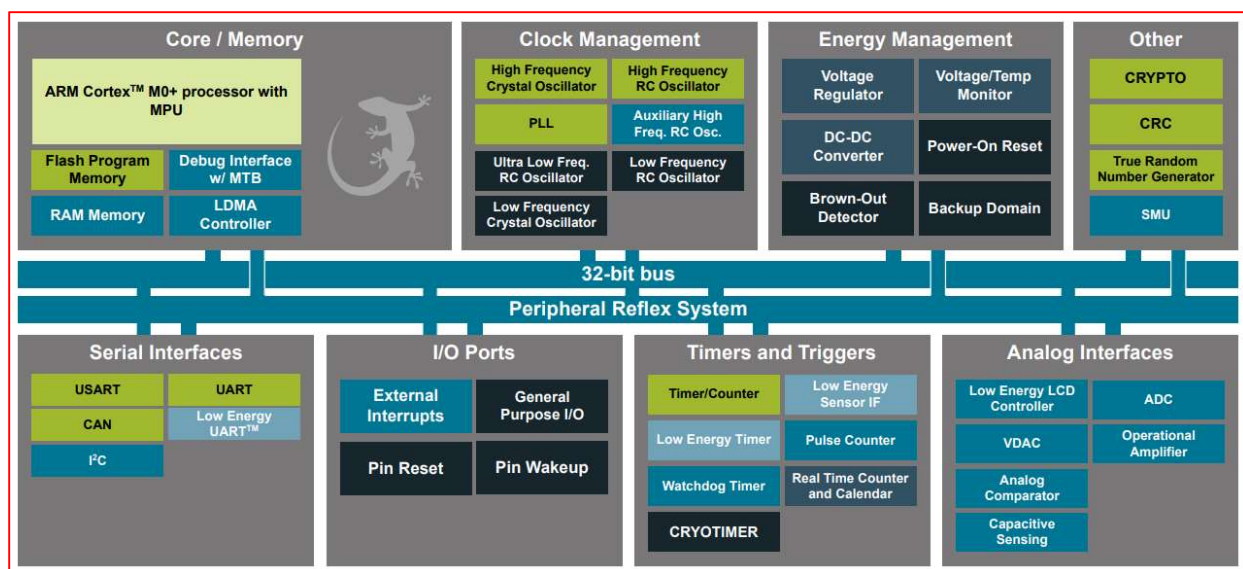
19.   The MCR System includes a communication controller for buffering the data received from the credit card reader prior to conversion by a first circuit. *See*, e.g., **EFM32**.   An example is illustrated below:

EFM32 at p. 1.

EFM32 at p. 2.

20.   The first circuit in the MCR System is configured to convert the data to an analog audio signal. *See*, e.g., **EFM32**. An example is illustrated below:


EFM32 at p. 2.

EFM32 at p. 15.

21.   The MCR System includes a 3.5 mm headphone connector to couple the hardware

component to an audio input port of the mobile device. An example is illustrated below:

22.   The connector in the MCR System bridges a microphone pin of the audio input port such

that the mobile device detects a presence of the connector in the audio input port. *See*, e.g., **3.5**

mm jack circuit. An example is illustrated below:
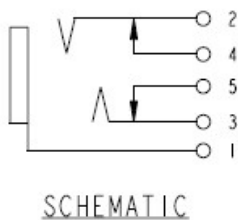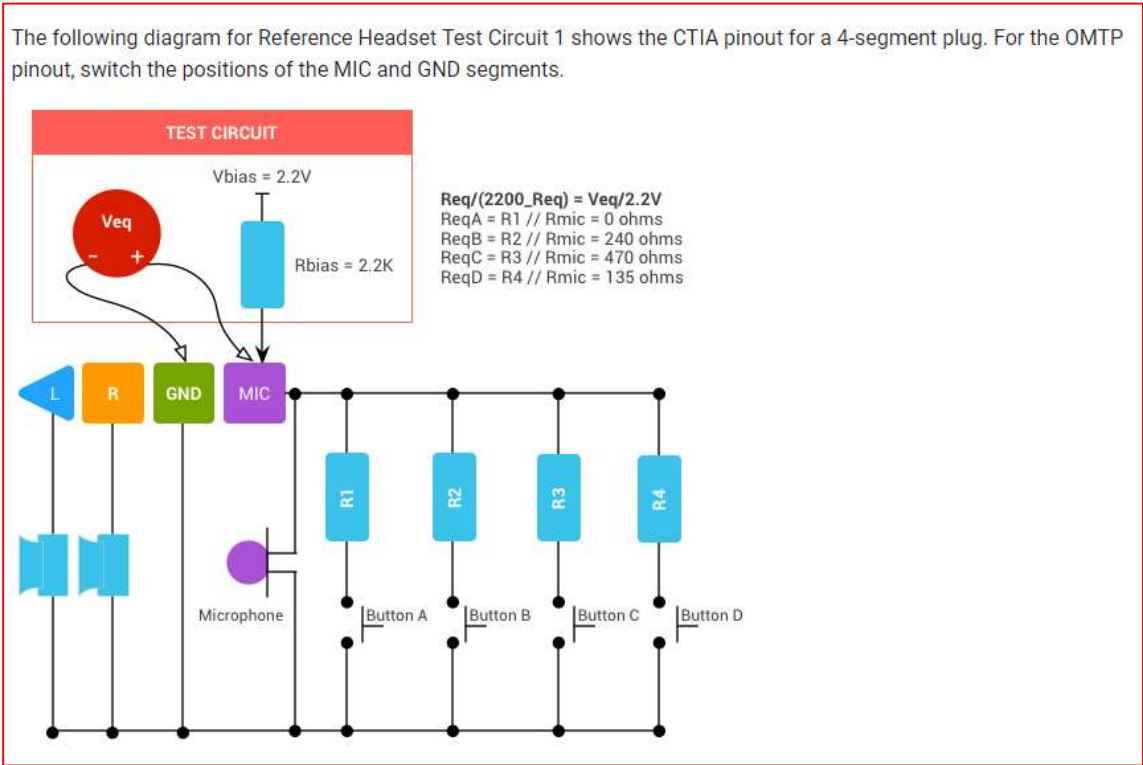
3.5 mm jack circuit.

23.   The   connector   in   the   MCR   System   provides   an   audio   communication   between   the
hardware component and the mobile device and communicates the analog audio signal from the
hardware component to the mobile device. *See*, e.g., **3.5 mm headset**. An example is illustrated
below:

Mechanical		
Function	**Accessory Support**	**Notes**
4 conductor 3.5 mm plug	Required	Ref: EIAJ-RC5325A standard
CTIA pinout order (LRGM)	Required	Except in regions with legal requirements for OMTP pinout
OMTP pinout order (LRMG)	Optional	
Microphone	Required	Must not be obstructed when operating headset controls

3.5 mm headset.

The following diagram for Reference Headset Test Circuit 1 shows the CTIA pinout for a 4-segment plug. For the OMTP pinout, switch the positions of the MIC and GND segments.

TEST CIRCUIT

Vbias = 2.2V

Veq
− +

Rbias = 2.2K

Req/(2200_Req) = Veq/2.2V
ReqA = R1 // Rmic = 0 ohms
ReqB = R2 // Rmic = 240 ohms
ReqC = R3 // Rmic = 470 ohms
ReqD = R4 // Rmic = 135 ohms

L   R   GND   MIC

R1   R2   R3   R4

Microphone   Button A   Button B   Button C   Button D

3.5 mm headset.

24.   The MCR System includes a second mechanism on the mobile device configured to receive the analog audio signal and convert the analog audio signal into binary data. *See*, e.g., **Mobile Pay Business and Blackhat**. An example is illustrated below:

Built-in security
Card numbers are encrypted and truncated instantly, helping to keep your customer's card data secure, whether you swiped a physical card or entered the numbers into the browser. Both card security and Authentication Verification Service are supported to further help guard against fraud.

Mobile Pay Business.

The initial models of the Square Reader, models S1 and S2, are quite simple and do not contain any integrated circuitry. The devices consist of a magnetic head connected to a headphone jack with a microphone output, which is sufficient to read a magnetic stripe. By sampling a phone's microphone input fast enough, an application is able to read the small voltages produced by the magnetic head and, by examining the zero-crossings in the signal, decode them into unencrypted credit card information.

Later models of the Square Reader, models S3 and S4, contain integrated circuitry that can read and modify the signal before transmitting it to the phone in order to provide encryption and amplification. However, the signal is still transmitted as a varying voltage, recorded by an app, and decoded into binary digits that represent encrypted or unencrypted data. In the case of encrypted data, the encrypted bits can then be sent to external servers for decryption.

Blackhat at p. 2.

We have examined the security of the Square Reader, one of many mobile card-reading devices designed to allow merchants to more easily enter the market of processing transactions. In our analysis, we have demonstrated a number of vulnerabilities in the Square Reader, including unenforced deprecation of old hardware, allowance of out-of-order transactions, and insufficient tamper-proof hardware features. We suggest that similar attacks could possibly be performed on other mobile point-of-sale competing systems such as Intuit GoPayments and PayPal Here, which utilize similar end-to-end encryption [2][26]. We emphasize that mobile card-reading devices face additional challenges beyond traditional point-of-sale hardware, given that they are smaller, cheaper, and compatible with commodity hardware. These challenges are manifest in the vulnerabilities that we have identified and in the responses we received to our disclosure reports outlined in Section VII.

Blackhat at p. 7.

25.   The MCR System includes a third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding. *See*, e.g., **Mobile Pay, Mobile Pay Business, and SSL**. An example is illustrated below:

Mobile Pay.

Mobile Pay Business.

> ## What is Secure Sockets Layer (SSL)?
>
> Secure Sockets Layer (SSL) is a standard security technology for establishing an encrypted link between a server and a client—typically a web server (website) and a browser, or a mail server and a mail client (e.g., Outlook).
>
> SSL allows sensitive information such as credit card numbers, social security numbers, and login credentials to be transmitted securely. Normally, data sent between browsers and web servers is sent in plain text—leaving you vulnerable to eavesdropping. If an attacker is able to intercept all data being sent between a browser and a web server, they can see and use that information.

SSL.

26.   Plaintiff has been damaged by Defendant's infringement of the '706 Patent.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests the Court enter judgment against

Defendant:

1.   declaring that the Defendant has infringed the '706 Patent;

2.   awarding Plaintiff its damages suffered as a result of Defendant's infringement of

the '706 Patent;

3.   awarding Plaintiff its costs, attorneys' fees, expenses, and interest; and

4.   granting Plaintiff such further relief as the Court finds appropriate.

JURY DEMAND

Plaintiff demands trial by jury, Under Fed. R. Civ. P. 38.

Dated: October 29, 2018   Respectfully Submitted

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